DIAPHRAGM B-DECK

SCREW ATTACHMENT

1.5WR22

Design thickness	0.0295 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws

Fu	50 ksi
Fy	40 ksi

Loading	ϕdf	Ωdf
Seismic	0.70	2.30
Wind	0.80	2.00
Other	0.70	2.30

Fastener Layout	Side-lap Conn/Span	Nominal Shear Strength, S_{nf}, plf[1,2] Span, ft.									K_1
		3	3.5	4	4.5	5	5.5	6	6.5	7	l/ft
36/9	0	855	755	670	595	530					0.366
	1	960	850	765	690	620	560	510			0.301
	2	1060	945	850	770	705	645	585	540	495	0.255
	3	1145	1030	930	845	775	715	665	610	565	0.222
	4	1220	1105	1005	920	845	780	725	675	630	0.196
	5	1290	1175	1075	990	910	845	785	735	690	0.176
	6	1355	1240	1140	1050	975	905	845	790	740	0.159
36/7	0	545	475	415	365	325					0.549
	1	670	585	520	465	420	380	345			0.414
	2	785	690	615	555	505	460	420	385	360	0.333
	3	885	785	705	640	585	535	495	460	425	0.278
	4	970	870	790	715	655	605	560	520	485	0.239
	5	1050	950	865	790	725	670	625	580	545	0.209
	6	1115	1020	935	855	790	735	685	640	600	0.186
36/5	0	485	425	380	335	300					0.659
	1	585	520	470	425	385	355	325			0.474
	2	675	605	550	500	460	425	395	365	340	0.370
	3	745	680	620	570	525	490	455	425	400	0.304
	4	800	740	680	630	585	545	510	480	450	0.257
	5	850	790	735	685	640	600	560	530	500	0.223
	6	885	830	780	730	685	645	610	575	545	0.197
36/4	0	370	325	290	255	225					0.823
	1	470	420	380	345	315	285	260			0.554
	2	545	495	455	415	380	355	330	305	285	0.417
	3	605	555	515	475	445	415	385	360	340	0.334
	4	650	605	565	530	495	465	435	410	390	0.279
	5	680	645	605	570	540	510	480	455	430	0.240
	6	710	675	640	610	575	550	520	495	470	0.210

[1] Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	ϕdf	Ωdf
Buckling	0.80	2.00

Deck Profile	I	Nominal Shear Due to Panel Buckling, S_{nb}, plf[2] Span, ft.								
	in^4/ft	3	3.5	4	4.5	5	5.5	6	6.5	7
WR	0.173	15257	11209	8582	6781	5493	4539	3814	3250	2802

[2] Design Strengths: ASD Required strength (Service Applied Load) <= Min $\{S_{nf}/\Omega_{df}, S_{nb}/\Omega_{db}\}$ • LRFD Required strength (Factored Applied Load) <= Min $\{\phi_{df}S_{nf}, \phi_{db}S_{nb}\}$

1.5WR20

Design thickness	0.0358 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws

Fu	50 ksi
Fy	40 ksi

Loading	ϕdf	Ωdf
Seismic	0.70	2.30
Wind	0.80	2.00
Other	0.70	2.30

Fastener Layout	Side-lap Conn/Span	Nominal Shear Strength, S_{nf}, plf[1,2] Span, ft.									K_1
		4	4.5	5	5.5	6	6.5	7	7.5	8	1/ft
36/9	0	815	725	650							0.403
	1	935	845	770	695	635					0.331
	2	1050	955	875	805	735	675	625	580	540	0.281
	3	1160	1055	970	895	830	770	715	660	620	0.244
	4	1255	1150	1060	980	910	850	795	745	695	0.216
	5	1345	1240	1145	1065	990	925	870	815	770	0.193
	6	1430	1320	1225	1140	1065	1000	940	885	835	0.175
36/7	0	505	445	400							0.605
	1	645	580	520	470	430					0.456
	2	770	695	635	580	535	490	455	420	395	0.366
	3	890	805	735	675	625	580	540	505	470	0.306
	4	995	905	830	770	710	665	620	580	545	0.263
	5	1090	1000	925	855	795	740	695	655	615	0.230
	6	1180	1090	1005	935	870	815	765	720	680	0.205
36/5	0	460	410	370							0.726
	1	580	525	480	440	405					0.522
	2	685	625	575	530	495	460	430	400	375	0.408
	3	780	715	660	615	575	535	505	475	445	0.334
	4	855	795	740	690	645	605	570	540	510	0.283
	5	920	860	805	755	710	670	635	600	570	0.246
	6	980	920	865	820	770	730	690	655	625	0.217
36/4	0	350	310	275							0.907
	1	470	425	390	360	330					0.610
	2	565	520	480	445	415	385	365	340	320	0.459
	3	645	600	560	520	490	460	430	405	385	0.368
	4	710	665	625	585	555	520	495	465	445	0.307
	5	760	720	680	645	610	580	550	520	495	0.264
	6	800	760	725	690	660	625	600	570	545	0.231

[1] Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	ϕdf	Ωdf
Buckling	0.80	2.00

Deck Profile	I	Nominal Shear Due to Panel Buckling, S_{nb}, plf[2] Span, ft.								
	in⁴/ft	4	4.5	5	5.5	6	6.5	7	7.5	8
WR	0.210	11482	9072	7348	6073	5103	4348	3749	3266	2870

[2] Design Strengths: ASD Required strength (Service Applied Load) <= Min $\{S_{nf}/\Omega_{df}, S_{nb}/\Omega_{db}\}$ • LRFD Required strength (Factored Applied Load) <= Min $\{\phi_{df}S_{nf}, \phi_{db}S_{nb}\}$

1.5WR18

Design thickness	0.0474 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws

Fu	50 ksi
Fy	40 ksi

Loading	ϕdf	Ωdf
Seismic	0.70	2.30
Wind	0.80	2.00
Other	0.70	2.30

Fastener Layout	Side-lap Conn/Span	Nominal Shear Strength, S_{nf}, plf[1,2] Span, ft.									K_1
		5	5.5	6	6.5	7	7.5	8	8.5	9	1/ft
36/9	0	865									0.464
	1	1045	955	870							0.381
	2	1195	1100	1020	940	870	810	755	710	665	0.324
	3	1340	1235	1150	1070	1000	935	870	820	770	0.281
	4	1475	1365	1270	1185	1115	1045	990	930	875	0.248
	5	1595	1485	1385	1300	1220	1150	1085	1030	975	0.223
	6	1715	1600	1495	1405	1320	1250	1180	1120	1065	0.202
36/7	0	530									0.696
	1	720	650	595							0.525
	2	880	810	745	690	640	595	555	520	490	0.422
	3	1035	950	880	820	765	720	675	630	595	0.352
	4	1175	1085	1010	940	880	830	780	740	700	0.303
	5	1305	1215	1130	1055	990	935	880	835	790	0.265
	6	1425	1330	1245	1165	1095	1035	980	930	880	0.236
36/5	0	490									0.835
	1	655	605	560							0.601
	2	800	740	685	640	600	565	530	500	470	0.469
	3	925	860	805	755	710	665	630	600	570	0.385
	4	1035	970	910	855	805	765	725	685	655	0.326
	5	1130	1065	1005	950	900	850	810	770	735	0.283
	6	1210	1150	1090	1030	980	935	890	850	810	0.250
36/4	0	370									1.044
	1	535	495	460							0.702
	2	670	620	580	545	510	480	455	425	400	0.528
	3	780	730	685	645	610	575	545	520	495	0.424
	4	875	825	780	735	700	665	630	600	575	0.354
	5	950	900	855	815	775	740	710	675	650	0.304
	6	800	760	725	690	660	625	600	570	545	0.266

[1] Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	ϕdf	Ωdf
Buckling	0.80	2.00

Deck Profile	I	Nominal Shear Due to Panel Buckling, S_{nb}, plf[2] Span, ft.								
	in⁴/ft	5	5.5	6	6.5	7	7.5	8	8.5	9
WR	0.279	11211	9265	7786	6634	5720	4983	4379	3879	3460

[2] Design Strengths: ASD Required strength (Service Applied Load) <= Min $\{S_{nf}/\Omega_{df}, S_{nb}/\Omega_{db}\}$ • LRFD Required strength (Factored Applied Load) <= Min $\{\phi_{df}S_{nf}, \phi_{db}S_{nb}\}$

1.5WR16

Design thickness	0.0598 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws

Fu	50 ksi
Fy	40 ksi

Loading	ϕdf	Ωdf
Seismic	0.70	2.30
Wind	0.80	2.00
Other	0.70	2.30

Fastener Layout	Side-lap Conn/Span	Nominal Shear Strength, S_{nf}, plf[1,2] Span, ft.									K_1
		6	6.5	7	7.5	8	8.5	9	9.5	10	1/ft
36/9	0	1130									0.428
	1	1325	1235	1150	1070	995	935	880			0.363
	2	1505	1405	1315	1235	1165	1090	1025	970	920	0.316
	3	1675	1570	1470	1385	1310	1240	1175	1110	1050	0.279
	4	1835	1720	1620	1530	1445	1370	1305	1240	1185	0.250
	5	1985	1865	1760	1665	1575	1500	1425	1360	1300	0.227
	6	2125	2005	1895	1795	1700	1620	1545	1475	1410	0.207
36/7	0	780									0.590
	1	985	915	855	795	740	695	655			0.474
	2	1175	1090	1020	960	905	855	805	760	720	0.396
	3	1350	1260	1180	1110	1050	990	940	895	855	0.340
	4	1515	1420	1335	1255	1190	1125	1070	1020	970	0.298
	5	1670	1565	1475	1395	1320	1255	1195	1140	1085	0.265
	6	1810	1705	1610	1525	1450	1375	1310	1250	1200	0.239
36/5	0	725									0.675
	1	905	845	790	745	705	665	630			0.527
	2	1065	1000	940	890	840	795	760	720	690	0.432
	3	1210	1140	1075	1020	970	920	875	840	800	0.366
	4	1335	1265	1200	1140	1085	1035	990	945	905	0.318
	5	1445	1375	1310	1250	1195	1140	1090	1045	1005	0.281
	6	1540	1470	1405	1345	1290	1235	1185	1140	1095	0.251
36/4	0	600									0.788
	1	770	720	675	635	605	570	545			0.594
	2	910	860	815	770	730	695	665	635	605	0.476
	3	1035	980	935	890	845	810	775	740	710	0.397
	4	1135	1085	1035	990	950	910	870	835	805	0.341
	5	1220	1170	1125	1080	1035	995	960	925	890	0.299
	6	1285	1240	1195	1155	1115	1075	1035	1000	970	0.266

[1] Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	ϕdf	Ωdf
Buckling	0.80	2.00

Deck Profile	I	Nominal Shear Due to Panel Buckling, S_{nb}, plf[2] Span, ft.								
	in^4/ft	6	6.5	7	7.5	8	8.5	9	9.5	10
WR	0.353	11049	9414	8117	7071	6215	5505	4910	4407	3977

[2] Design Strengths: ASD Required strength (Service Applied Load) <= Min $\{S_{nf}/\Omega_{df}, S_{nb}/\Omega_{db}\}$ • LRFD Required strength (Factored Applied Load) <= Min $\{\phi_{df}S_{nf}, \phi_{db}S_{nb}\}$